



Well-being of Canadian Veterans during the COVID-19 pandemic: cross-sectional results from the COVID-19 Veteran well-being study

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ABSTRACT

Background: The impacts of the COVID-19 pandemic have disproportionately affected different population groups. Veterans are more likely to have pre-existing mental health conditions compared to the general Canadian population, experience compounded stressors resulting from disruptions to familial, social, and occupational domains, and were faced with changes in health-care delivery (e.g. telehealth). The objectives of this study are to assess (a) the mental health impact of COVID-19 and related life changes on the well-being of Veterans and (b) perceptions of and satisfaction with changes in health-care treatments and delivery during the pandemic.

Methods: A total of 1136 Canadian Veterans participated in an online survey. Participants completed questions pertaining to their mental health and well-being, lifestyle changes, and concerns relating to the COVID-19 pandemic, as well as experiences and satisfaction with health-care treatments during the pandemic.

Results: Results showed that 55.9% of respondents reported worse mental health functioning compared to before the pandemic. The frequency of probable posttraumatic stress disorder, major depressive disorder, generalized anxiety disorder, alcohol use disorder, and suicidal ideation were 34.2%, 35.3%, 26.8%, 13.0%, and 22.0%, respectively. Between 38.6% and 53.1% of respondents attributed their symptoms as either directly related to or exacerbated by the pandemic. Approximately 18% of respondents reported using telehealth for mental health services during the pandemic, and among those, 72.8% indicated a choice to use telehealth even after the pandemic.

Conclusions: This study found that Veterans experienced worsening mental health as a result of the COVID-19 pandemic. The use of telehealth services was widely endorsed by mental health treatment-seeking Veterans who transitioned to virtual care during the pandemic. Our findings have important clinical and programme administrator implications, emphasizing the need to reach out to support veterans, especially those with pre-existing mental health conditions and to enhance and maintain virtual care even post-pandemic.

Bienestar de los veteranos canadienses durante la pandemia de COVID-19: Resultados transversales del estudio de bienestar de veteranos de COVID-19

Antecedentes: Los impactos de la pandemia del COVID-19 han afectado de manera desproporcionada a diferentes grupos de la población. Los veteranos tienen más probabilidades de tener afecciones de salud mental preexistentes en comparación con la población canadiense en general, experimentar factores estresantes agravados como resultado de las interrupciones en los dominios familiares, sociales, y ocupacionales, y se enfrentan a cambios en la prestación de la atención médica (por ejemplo, telesalud). Los objetivos de este estudio son evaluar (a) el impacto en la salud mental del COVID-19 y los cambios de vida relacionados en el bienestar de los Veteranos y (b) las percepciones y la satisfacción con los cambios en los tratamientos y la entrega de la atención médica durante la pandemia.

Métodos: Un total de 1136 veteranos canadienses participaron en una encuesta en línea. Los participantes completaron preguntas relacionadas con su salud mental y bienestar, cambios en

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退伍军人; 心理健康; 幸福感; COVID-19; 远程医疗

HIGHLIGHTS

- Over 50% of Veterans reported worse mental health compared to before the pandemic.
- Probable mental health conditions based on self-reports ranged from 13% to 35%.
- Nearly 1 in 5 Veterans surveyed reported using telehealth for mental health services during the pandemic.

el estilo de vida, e inquietudes relacionadas con la pandemia del COVID-19, así como experiencias y satisfacción con los tratamientos de atención médica durante la pandemia.

Resultados: Los resultados mostraron que el 55,9% de los encuestados informaron un peor funcionamiento de la salud mental en comparación con antes de la pandemia. La frecuencia de probable trastorno de estrés postraumático, trastorno depresivo mayor, trastorno de ansiedad generalizada, trastorno por consumo de alcohol, e ideación suicida fue del 34,2%, 35,3%, 26,8%, 13,0% y 22,0%, respectivamente. Entre el 38,6% y el 53,1% de los encuestados atribuyeron sus síntomas como directamente relacionados con la pandemia o agravados por ella. Aproximadamente el 18% de los encuestados informó haber utilizado la telesalud para los servicios de salud mental durante la pandemia, y entre ellos, el 72,8% indicó que había optado por utilizar la telesalud incluso después de la pandemia.

Conclusiones: Este estudio encontró que los Veteranos experimentaron un empeoramiento de la salud mental como resultado de la pandemia del COVID-19. El uso de los servicios de telesalud fue ampliamente respaldado por los Veteranos en busca de tratamiento de salud mental que hicieron la transición a la atención virtual durante la pandemia. Nuestros hallazgos tienen importantes implicaciones clínicas y para los administradores de programas, enfatizando la necesidad de ayudar a los veteranos, especialmente a aquellos con condiciones de salud mental preexistentes, y de mejorar y mantener la atención virtual incluso después de una pandemia.

COVID-19 疫情期间加拿大退伍军人的幸福感: 来自 COVID-19 退伍军人幸福感研究的横断面结果

背景: COVID-19 疫情的影响不成比例地影响了不同的人群。与加拿大普通民众相比, 退伍军人更有可能有预先存在的心理健康状况, 经历因家庭, 社会和职业领域中断而导致的复合应激源, 并面临医护服务的变化 (例如远程医疗)。本研究旨在评估 (a) COVID-19 和相关生活变化对退伍军人幸福感的心理健康影响, 以及 (b) 对疫情期间医护治疗和交付变化的看法和满意度。

方法: 共有 1136 名加拿大退伍军人参加了一项在线调查。参与者完成了与其心理健康和幸福感, 生活方式改变, COVID-19 疫情相关的担忧以及疫情期间对医护治疗的体验和满意度的问题。

结果: 结果显示, 55.9% 的受访者表示心理健康功能比疫情前更差。可能的创伤后应激障碍, 重度抑郁障碍, 广泛性焦虑障碍, 酒精使用障碍和自杀意念的频率分别为 34.2%, 35.3%, 26.8%, 13.0% 和 22.0%。38.6% 至 53.1% 的受访者将其症状归因于与疫情直接相关或被疫情加剧。大约 18% 的受访者报告了在疫情期间使用远程医疗来获取心理健康服务, 其中 72.8% 表示即使在疫情之后也选择使用远程医疗。

结论: 本研究发现, 由于 COVID-19 疫情, 退伍军人的心理健康状况恶化。远程医疗服务的使用得到了在疫情期间过渡到虚拟护理的寻求心理健康治疗退伍军人的广泛认可。我们的研究结果具有重要的临床和计划管理意义, 强调需要伸出援手支持退伍军人, 尤其是那些有先存心理健康问题的退伍军人, 即使在疫情之后也加强和维持虚拟护理。

1. Introduction

Existing research has highlighted the negative impact of the COVID-19 pandemic on the general health and well-being of Canadians (Bulloch et al., 2021). The pandemic and its associated lifestyle changes, such as stay-at-home orders, service restrictions, and resource limitations can be particularly challenging and distressing for at-risk populations such as Veterans (Findlay, Arim, & Kohen, 2020; Ramage-Morin & Polsky, 2020).

Veterans experience psychiatric conditions at higher rates compared to civilians (Gadermann et al., 2012; Rusu, Zamorski, Boulos, & Garber, 2016; Thériault et al., 2020). The findings from the 2019 Canadian Life after Service Survey (LASS) (Sweet, Poirier, Pound, & Van Til, 2020) revealed that rates of diagnosed mental health conditions are markedly higher in Canadian Armed Forces (CAF) Veterans than age- and sex-matched Canadian civilians for major depressive disorder (MDD; 25.7% vs. 7.0%), posttraumatic stress

disorder (PTSD; 23.7% vs. 1.3%), and generalized anxiety disorder (GAD; 21.3% vs. 6.4%) (Sweet et al., 2020). Canadian Veterans also exhibit high rates of problematic alcohol use (24.1%), but at rates similar to matched Canadian civilians (25.2%) (Sweet et al., 2020). Challenges associated with the pandemic may create conditions that trigger mental illness, increase the severity of symptoms of mental health conditions, and/or increase needs for mental health support and services (Asmundson et al., 2020; Murphy et al., 2020; Van Til et al., 2017). Public safety guidelines have reduced access to essential services and supports, and significantly reduced social interactions, which is a particular concern for Veterans who may already have limitations related to social engagement (Mcfarlane, Jetly, Castro, Greenberg, & Vermetten, 2020; Wilson, Hill, & Kiernan, 2018). In addition, even prior to the pandemic, top stressors reported by Veterans included work instability and financial difficulties (Spelman, Hunt, Seal, & Burgo-Black, 2012). These challenges may be further amplified in the pandemic, and compounded by increased rates of

mental illnesses, and service needs for mental support. Taken together, the compounding of vulnerabilities and risks may be particularly severe for Veterans.

The pandemic also largely transformed the delivery of healthcare services. Across Canada, physical and mental healthcare transitioned from in-person formats to telehealth (e.g. care delivered via telephone or video-conferencing). For mental healthcare, telehealth can be as effective as in-person therapy (Turgoose, Ashwick, & Murphy, 2017); however, it can also pose challenges for implementation and adherence to essential components of psychotherapy, such as elements designed to reduce avoidant behaviours. Traditional forms of psychotherapy, including trauma-focused psychotherapy often used with Veteran populations, may require adaptations to accommodate telehealth delivery modalities. Clinicians also need to assess safety and practical considerations in virtual delivery of trauma-focused therapy. Taken together, these dramatic changes in healthcare delivery may affect Veteran satisfaction with service utilization and impact Veterans' overall well-being. Given recent national data suggesting that 40% of the Canadian general population report worse mental health during the pandemic and 20% report increased alcohol use (Mental Health Commission of Canada [MHCC], 2020), with evidence that pre-existing psychological conditions increase the risk of adverse psychological consequences (Vindegaard & Benros, 2020), research is needed to better understand the impact of the pandemic on the well-being of Veterans (Holmes et al., 2020).

1.1. Purpose and aims

The overarching aim of the current study was to evaluate the overall self-reported well-being of Canadian Veterans during the COVID-19 pandemic. We used baseline data from a longitudinal survey of Veteran well-being during the pandemic to better understand: 1) the impact of the pandemic on general mental health and well-being; and 2) Veterans' perspectives on the acceptability and utility of changes in healthcare delivery.

2. Methods

2.1. Data collection and procedure

A national longitudinal online survey was distributed across Canada in English and French. Participants were recruited using professional networks, social media advertisements, participant recruitment websites, press releases, Veteran community and advocacy groups, and word of mouth. Recruitment efforts also targeted hard-to-reach regions to ensure sampling included all provinces and territories. The survey was open to all CAF Veterans over the age of 18 residing in

Canada during the baseline data collection period (7 July 2020 to 1 February 2021). Data were collected using a survey-hosting platform, Research Electronic Data Capture (REDCap), where participants were given the option to complete a short- (20 minutes) or long-form (30 minutes) survey. In this paper, we examine the baseline data associated with this larger initiative.

2.2. Measures

2.2.1. Posttraumatic stress (PTSD)

The PTSD Checklist for the DSM-5 (PCL-5) (Blevins, Weathers, Davis, Witte, & Domino, 2015) assessed past month probable PTSD and PTSD symptom severity based on DSM-5 symptom clusters. Respondents rated their distress from each of the 20 items from 0 (*not at all*) to 4 (*extremely*). Responses were summed to provide a total score, where higher scores indicated greater PTSD symptom severity. Scores of 33 or higher were indicative of probable PTSD (Bovin et al., 2016). The reliability and validity of the PCL-5 are well established within treatment-seeking military populations (Bovin et al., 2016; Wortmann et al., 2016). Internal consistency in the current study was high (Cronbach's $\alpha = 0.98$).

2.2.2. Depression (MDD)

Probable depression was measured using the self-administered Patient Health Questionnaire-9 (PHQ-9) (Kroenke & Spitzer, 2002; Kroenke, Spitzer, & Williams, 2001). Participants were asked if they had been bothered by nine symptoms of depression during the past two weeks with responses ranging from 0 (*not at all*) to 3 (*nearly every day*) (Spitzer, Kroenke, & Williams, 1999). Probable MDD was indicated if a participant had a total score of 10 or more on the PHQ-9. Thoughts of suicide or self-harm were measured using the suicide item of the PHQ-9, whereby suicidal ideation/self-harm was indicated by a response of 'several days or greater' during the past two weeks (Louzon, Bossarte, McCarthy, & Katz, 2016; Richardson et al., 2018; Richardson, St Cyr, Nelson, Elhai, & Sareen, 2014; Simon et al., 2013). Internal consistency in the current sample was high ($\alpha = 0.94$).

2.2.3. General Anxiety (GAD)

Probable anxiety was assessed using the General Anxiety Scale (GAD-7) (Spitzer et al., 1999). Participants were asked how bothered they had been by seven anxiety symptoms over the past two weeks with responses ranging from 0 (*not at all*) to 2 (*more than half the days*) (Spitzer et al., 1999). GAD was indicated if participants had a total score of 10 or more (Spitzer, Kroenke, Williams, & Löwe, 2006). Internal consistency in the current sample was high ($\alpha = 0.95$).

2.2.4. Alcohol use (AUD)

Probable AUD was measured using the AUDIT (Babor, Biddle-Higgins, Saunders, & Monteiro, 2001). Participants were asked 10 questions about their current alcohol use. Responses ranged from 0 (*never*) to 4 (*4 or more times a week*) for drinking frequency; 0 (*none*) to 5 (*10 or more*) for drinking quantity; 0 (*never*) to 4 (*daily or almost daily*) for drinking consequences; and 0 (*no*), 2 (*yes, but not in the past year*), or 4 (*yes, during the past year*) for concern of others and injury. Potential scores ranged from 0 to 40, with scores of 7 (for women) and 8 (for men) or above indicating probable AUD (Babor et al., 2001). Internal consistency was good in the current sample ($\alpha = 0.82$).

To determine whether mental health symptoms were associated with the pandemic, an additional item was added to each of the PCL-5, PHQ-9, GAD-7, and AUDIT tools, asking whether the reported symptoms were directly related to the pandemic, made worse by the pandemic, or unrelated to the pandemic.

2.2.5. COVID-19-related factors

Selected items from the CoRonavIruS Health and Impact Survey (CRISIS) (Merikangas, Milham, & Stringaris, 2020; Nikolaidis et al., 2020) were used to assess personal or family exposure and consequences (e.g. fallen ill, hospitalized) of COVID-19, as well as relative difficulty of the household in meeting financial needs since the start of the pandemic from 0 (*much more difficult*) to 4 (*much easier*). A dichotomous 'COVID-19 exposure' variable was created using five items from the CRISIS questionnaire where a positive COVID-19 exposure was indicated by any of: exposure to someone with suspected or confirmed COVID-19, family members with suspected or confirmed COVID-19, personal suspected or confirmed COVID-19, personal consequences as a result of COVID-19 (e.g. illness, hospitalization and quarantine), and family consequences as a result of COVID-19 (e.g. illness, passed away, quarantine). A negative COVID-19 exposure was indicated when participants did not endorse any of these circumstances. General mental health at the time of survey completion relative to the start of the pandemic was assessed with responses ranging from 0 (*significantly worse than before*) to 4 (*significantly better than before*). Additional items were used to assess pandemic-related changes in employment status or setting, salary, and concerns about employment stability.

2.2.6. Access to healthcare and telehealth

Participants were asked about difficulties accessing healthcare, whether access difficulties were related to mental or physical healthcare (or both), and the level of distress experienced in the past week due to difficulties accessing healthcare (from 0 = *not at all* to 4 = *extremely*). For those who experienced telehealth

services, two items were used to assess telehealth satisfaction (e.g. 'I would recommend telehealth to a friend', and 'I would choose to use telehealth in the future if coming to the office is inconvenient') using a Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

2.3. Data analytic strategy

Missing data cut-off was established at 20% or less for the current sample, and treatment of missing data was addressed via pairwise deletion. An alpha level of 0.05 was used for statistical significance in all tests. Analyses were conducted using IBM SPSS Statistics, Version 27 (SPSS, 2019). Sociodemographic characteristics, employment characteristics, mental health functioning, mental health symptoms were assessed using descriptive statistics. Percentages of participants who would recommend telehealth to a friend, use telehealth in the future, and for mental health were calculated by combining 'agree' and 'strongly agree' responses. Associations of mental health symptoms (via PTSD, MDD, GAD, and AUDIT scores) with COVID-19 exposure (exposed vs. not exposed), and with gender (male vs. female) were explored using *t*-tests. The association between age and mental health symptoms was explored using bivariate Pearson correlations. Chi square analyses were used to examine the association of age with telehealth satisfaction variables. Eta value was interpreted for the strength of the association, and eta squared was used to determine the amount of variance accounted for.

3. Results

3.1. Sample characteristics

A total of 1,136 CAF Veterans completed the baseline assessment (see Table 1). The mean age was 55.3 ($SD = 13.1$) years. A large proportion of respondents were men (75.9%; $n = 862$) and self-identified as white (92.1%; $n = 1,046$). Participants served an average of 20.2 years in the military ($SD = 11.2$). Most (76.7%; $n = 871$) were married, or in a common-law or long-term relationship. There was good representation among the Canadian provinces, with over half living in or around a city (58.3%; $n = 662$). There were high rates of unemployment in Veterans (62.2%; $n = 707$). In order to ensure representativeness of Veterans in the current sample and facilitate comparisons with published research, we evaluated the sample representatives on proportions of demographic characteristics relative to the larger Veteran population (Demographics: Estimated Veteran Population by Province). Tests of proportional comparisons via mean difference found that participants were similarly dispersed across geographical regions, with small differences in percentage distribution ranging from 0% (equitable distribution) to a maximum of

Table 1. Sociodemographic characteristics of Veteran respondents at baseline data collection (between 7 July 2020 and 1 February 2021).

Variable	<i>n</i> or <i>M</i>	% or <i>SD</i>
Age (years)	55.3	13.1
Gender		
Men	862	75.9%
Women	247	21.7%
Other	6	0.5%
Prefer not to say	4	0.4%
Missing	17	1.5%
Marital status		
Married/in a relationship	871	76.7%
Single	243	21.4%
Prefer not to answer	8	0.7%
Missing	14	1.2%
Ethnicity		
White	1046	92.1%
Indigenous	61	5.4%
Other non-white	42	3.7%
Prefer not to say	25	2.2%
Highest level of education		
Secondary or lower	315	27.7%
Post-secondary or higher	805	70.9%
Missing	16	1.4%
Annual income		
<\$40,000	98	8.6%
\$40,000–\$59,999	194	17.1%
\$60,000–\$79,999	162	14.2%
\$80,000–\$99,999	168	14.7%
\$100,000–119,999	137	12.0%
≥\$120,000	219	19.3%
Don't know	11	1.0%
Prefer not to say	124	10.9%
Missing	23	2.0%
Province/territory		
Alberta	113	9.9%
British Columbia	129	11.4%
Canadian Territories (Nunavut, Northwest Territories, Yukon)	5	0.5%
Manitoba	40	3.5%
New Brunswick	72	6.3%
Newfoundland	34	3.0%
Nova Scotia	99	8.7%
Ontario	356	31.3%
Prince Edward Island	12	1.1%
Quebec	144	12.7%
Saskatchewan	13	1.1%
Missing	119	10.5%
Area of residence		
Large city	205	18.0%
Suburbs of a large city	193	17.0%
Small city	264	23.2%
Town/village	261	23.0%
Rural area	193	17.0%
Missing	20	1.8%
Living arrangements ^a		
Live alone	189	16.6%
Live with spouse/partner	876	77.1%
Live with family ^b	432	38.0%
Live with friends/roommates/other	26	2.3%
Length of military service (years)	20.2	11.2

^aCategories are not mutually exclusive, therefore, total exceeds 100%.

^bFamily includes children, parents/in-laws, or other family.

4.80%. There are some differences between sample and population on distributions of gender and age, such that our sample contained higher proportions of females (22.2% compared to 12.3%), and younger in age (85.5% under ages of 69 compared to 62.2%).

3.2. Employment

Our results showed that among Veterans who were working during the COVID-19 pandemic ($n = 425$),

44.0% ($n = 187$) reported concerns with regard to employment stability. Almost half of employed Veterans (45.6%; $n = 194$) transitioned to telework; of these, over two-thirds acknowledged increased stress since beginning telework (69.1%; $n = 134$). Participants also (20.2%; $n = 230$) reported a change in employment status, including reduced hours (19.0%; $n = 216$), reduced income (14.3%; $n = 162$) and layoffs (5.1%; $n = 58$).

3.3. Health functioning

Over half of the surveyed Veterans (55.9%; $n = 635$) reported worse mental health functioning compared to before the pandemic. The proportion of Veterans who met screening criteria for probable mental disorders ranged from 13.0% to 35.3% on disorders of AUD (13.0%; $n = 148$), PTSD (34.2%; $n = 388$), GAD (26.8%; $n = 304$), SI (22.0%; $n = 250$) and MDD (35.3%; $n = 401$). Among Veterans who reported these mental health symptoms, 38.6% ($n = 277$), 48.4% ($n = 343$) and 53.1% ($n = 351$) attributed their PTSD, MDD and GAD symptoms, respectively, as either directly related to or exacerbated by the pandemic.

To evaluate differences in mental health outcomes, we used *t*-tests to compare group values on PTSD, MDD, GAD, and AUD symptomology by COVID-19 exposure, and by gender. Distribution of data was examined and values were within normative ranges for both skew and kurtosis, using cut-offs of ± 3 and 10, respectfully (Kline, 2016). Mean differences in mental health symptoms based on exposure to COVID-19 are noted on Table 2, while mean differences based on gender are presented in Table 3. Findings indicated that for those in the COVID-19 exposure group, female gender was associated with more severe PTSD, MDD, and GAD symptoms and less severe AUD symptoms. Younger age was associated with greater symptoms of PTSD [$r(782) = -.39, p < .001$], MDD [$r(793) = -.39, p < .001$], GAD [$r(795) = -.42, p < .001$], and AUD [$r(565) = -.15, p < .001$].

Table 2. Mean PCL-5, PHQ-9, GAD-7, and AUDIT scores, by COVID-19 exposure status.

Variable	df	COVID exposure	No COVID exposure	t-Statistic
		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
PCL-5	615	36.8 (24.0)	29.1 (23.7)	2.97**
PHQ-9	626	12.6 (7.1)	9.5 (8.1)	3.81***
GAD-7	628	10.0 (6.7)	7.1 (6.7)	4.04***
AUDIT	427	5.5 (5.3)	5.5 (5.0)	-0.03

AUDIT = Alcohol Use Disorders Identification Test; df = degrees of freedom; GAD-7 = Generalized Anxiety Disorder Scale; M = mean; PCL-5 = Post-traumatic Stress Disorder Checklist for DSM-5; PHQ-9 = Patient Health Questionnaire; SD, standard deviation.

** $p < .01$.

*** $p < .001$.

Table 3. Mean PCL-5, PHQ-9, GAD-7, and AUDIT scores, by gender.

Variable	df	Males	Females	t-Statistic
		<i>M (SD)</i>	<i>M (SD)</i>	<i>t</i>
PCL-5	781	30.7 (23.8)	35.0 (23.7)	-2.10*
PHQ-9	793	9.9 (8.0)	12.1 (7.4)	-3.30**
GAD-7	795	7.5 (6.7)	9.3 (6.6)	-3.29**
AUDIT	562	6.0 (5.3)	4.7 (4.6)	2.50*

AUDIT = Alcohol Use Disorders Identification Test; df = degrees of freedom; GAD-7 = Generalized Anxiety Disorder Scale; M = mean; PCL-5 = Post-traumatic Stress Disorder Checklist for DSM-5; PHQ-9 = Patient Health Questionnaire; SD, standard deviation.

* $p < .05$.

** $p < .01$.

3.4. Access to care

Approximately half of the Veterans surveyed (47.8%; $n = 543$) reported difficulty accessing healthcare, with challenges accessing primary, dental, and speciality care being the most frequently reported. Veterans also reported difficulties accessing care for physical health (20.1%; $n = 228$), mental health (4.8%; $n = 54$), and a combination of both physical and mental health (22.7%; $n = 258$). Veterans reported difficulties accessing mental healthcare (74.4%; $n = 232$) and physical healthcare (65.2%; $n = 317$), with moderate to extreme emotional distress related to these challenges.

At the time of data collection, 17.8% ($n = 202$) of Veterans were using telehealth services to access mental healthcare. Among these individuals, 72.3% ($n = 146$) indicated that they would recommend telehealth to a friend, and 72.8% ($n = 147$) indicated that, even upon return to face-to-face healthcare service delivery, they would choose to continue receiving mental healthcare via telehealth services if in-person is inconvenient. No significant associations between age and: 1) the likelihood of recommending telehealth to a friend ($\eta = 0.18$; $\eta^2 = 0.03$) or 2) choice for telehealth services post-pandemic ($\eta = 0.15$; $\eta^2 = 0.02$) were observed.

4. Discussion

Our findings provide a snapshot of the impact of the COVID-19 pandemic on Veteran mental well-being and changes to healthcare service use. Results show that more than half of the Veterans surveyed (55.9%) felt that their mental health had worsened during the COVID-19 pandemic. This is somewhat higher than a recent survey of the Canadian general population, which showed that 50% of Canadians surveyed felt that their mental health had deteriorated over the course of the pandemic (MHCC, 2020). Self-reported symptoms of mental health conditions were also significantly higher when compared to the 2013 Canadian Life After Service Survey on Canadian Veterans (Thompson et al., 2014; Van Til et al., 2017). Our reported rates of probable PTSD and probable MDD

were higher than previously reported norms (34% and 35%, respectively, compared to 15% and 18% in 2013) (Richardson et al., 2014; Thériault et al., 2020). However, findings are consistent with similarly high rates of lifetime prevalence for mental health conditions self-reported in the CAF Members and Veterans Mental Health Follow-up Survey (Sareen et al., 2021). These rates, in part, may be attributable to the negative impact of social isolation on the already-vulnerable population of Veterans with high prevalence of mental health conditions. Fewer than half of the Veterans surveyed attributed their mental health symptoms to the pandemic, which may be indicative of pre-existing service-related mental health conditions, such as PTSD. Findings are also somewhat consistent with data identifying health concerns unrelated to COVID-19 as a top stressor in a sample of older Veterans aged 55 and older (Mahar et al., 2021). Certain group characteristics (e.g. younger age, female genders, and prior exposure to COVID-19) were associated with a higher likelihood of meeting the criteria for probable PTSD, MDD, and GAD. The identification of these characteristics can inform targeted health policy and programme planning around access to telehealth services during the pandemic and beyond. More importantly, these findings, along with published results of other studies, underscore the mental health needs and existing vulnerabilities of Veterans as a key group to support.

In this study, nearly a quarter of Veterans endorsed experiencing suicidal ideation. This is significantly higher than the 5.2–6.6% reported among Regular and Reserve Forces Veterans in the 2013 Canadian Life After Service Survey (Thompson et al., 2014), the 11.9% reported among Veterans Affairs Canada clients (Thompson, Sweet, Poirier, & VanTil, 2011), and the 16.8% reported in a sample of treatment-seeking Canadian Veterans (Richardson et al., 2014). Suicidal ideation is a key marker of the causal pathway between mental health concerns and suicide attempts/completed suicide; thus, our results have important public health implications for suicide prevention and intervention strategies. These findings also reinforce the need to ensure that increased access to treatment and general support is available to Veterans, especially during a pandemic.

Our findings also highlighted the general acceptability of telehealth. Prior to the pandemic, few studies evaluated the acceptability and preference of telehealth. The pandemic created urgent demand for use of telehealth with little consideration for overall satisfaction and preferences. Our study provided unique insights of telehealth use. In particular, of the Veterans who used telehealth during the pandemic, most indicated that they would prefer to continue receiving their psychiatric care via telehealth even after the pandemic ends. For many Veterans, accessing healthcare from their home may reduce the stress and anxiety of travel for care.

Telehealth may also provide an opportunity to seek mental health treatment without the added stigma of attending a mental health facility (Shanafelt, Ripp, & Trockel, 2020). Evidence of the acceptability of telehealth for mental health treatment-seeking Veterans in our sample contribute to a small body of evidence to date on the rates of use of telehealth for Veterans during COVID-19. These findings also hold important clinical and programme development implications, namely, ensuring the continuity and availability of telehealth options post-pandemic, such that Veterans who prefer it can still access these services. Meanwhile, approximately half the sampled Veterans reported difficulty accessing healthcare during the pandemic. Findings help identify the need(s) for additional infrastructure improvements to better support ease and equity of service access.

Despite these findings, telehealth might have some unintended negative consequences, including reinforcing avoidance behaviours commonly seen in individuals with PTSD (O'Donnell, Elliott, Lau, & Creamer, 2007; Sheynin et al., 2017). While some evidence-based treatments such as pharmacotherapy can easily be adapted to virtual care settings, some forms of psychotherapy, such as cognitive behavioural psychotherapy (CBT) or behavioural activation can be more challenging for clinicians to adapt to virtual platforms. Although internet-delivered CBT is widely available, its efficacy for treating military-related PTSD is still in its infancy (Simon et al., 2019) and, prior to the COVID-19 pandemic, had yet to be widely implemented in Veteran populations. Telehealth may have equity issues, as it requires reliable internet access. As well, clinicians need to carefully weigh the safety of virtual delivery of intensive treatments with the need for continuity of care for symptom management.

The results from the survey should be considered in the context of several limitations. First, given the evolving changes of an unprecedented global pandemic, associations between studied variables may also evolve over time. The current paper presented the baseline data of from longitudinal research project. Future research is important in continuing to disseminate findings in relation to the changing nature of the pandemic. The associations found within the current paper should also be considered in the contexts of the changing mental health landscape. Another limitation is that study findings are based on a sample of self-selected Veterans and may not be representative of all Canadian Veterans. Relative to demographic characteristics from a national sample ([Demographics: Estimated Veteran Population by Province](#)), the current study showed comparable distribution of Veterans sampled across provinces. Yet, there are differences in gender (e.g. more females), and age (more Veterans under the ages of 69). These differences may contribute to the higher

prevalence of mental health conditions found in the current study relative to the national data.

It is also possible that Veterans who were more symptomatic were more likely to complete the survey. Even though, social media was used to veterans, it is also possible that treatment-seeking Veterans were more aware of potential research studies through association with the clinical and institutional settings where recruitment was conducted. Another factor that may contribute to biases in sampling is the potential social economic barriers to participating. Engagement with the current study required an internet connection, access to recruitment materials, and familiarity with the use of technology. Thus, Veteran groups who do not have ready access to the internet, a computer, or smartphone/devices, or who are less familiar with the use of digital devices may be underrepresented in our sample (Bethlehem, 2010). The data presented in this study are also cross-sectional in nature, which limits the conclusions that can be drawn from the study. Comparisons of sampling norms were made against a 2013 survey. The limitations of this include potential shifts in mental health trends over time. Given the prevalence and impact of COVID-19, we can expect increases in mental health vulnerabilities through symptom exacerbation. Future studies will incorporate longitudinal data to test time trends and mediation hypotheses, including the associations between social isolation and psychological outcomes, to better elucidate potential causal relationships.

Further efforts to examine the relationship between domains of support and experiences of social isolation may identify risk factors and barriers to care, and better prepare Veteran-serving organizations for future emergency responses. Mapping findings against regional restrictions in place at the time of the survey will help delineate the impact of the pandemic and its associated infection prevention and control strategies on Veteran well-being. Additional work aimed at identifying and understanding areas of concern from the Veteran perspective (e.g. accessing essential goods) will also help Veteran-serving organizations tailor efforts to meet the unique and dynamic needs of Canadian Veterans during times of exceptional challenges.

5. Conclusions

Our study found that Veterans reported worsening mental health and/or symptom exacerbation as a result of the COVID-19 pandemic. These results have important clinical implications, emphasizing the need to reach out and support veterans during the pandemic, especially those with pre-existing mental health conditions. The use of virtual care services (telehealth) was widely endorsed by mental

health treatment-seeking Veterans who transitioned to virtual care during the pandemic. Our findings also have important implications for programme administrators, to maintain and enhance virtual care even post pandemic.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

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Ethics approval and consent to participate

All experimental protocols were approved by the Research Ethics Board at Western University's Office of Human Research Ethics and the Lawson Health Research Institute. Study methodologies and protocols were carried out in accordance with relevant guidelines and regulations. Informed consent was obtained from all participants of the current study.

Availability of data and materials

The datasets from the current study are not publicly available due being part of a longitudinal research project. Data is available from the corresponding author on reasonable request.

Authors' contributions

Authors JDR, KSR, CF, JLL, RAF, TL, DG, ED, VS, FH, PS, GD, MR, AB, MM, RJ, AH, RL, & AN contributed to the design, implementation, and writing of this study. Authors CF, RAP, TL, DG, and JLL contributed to the data preparations and data analyses. All authors helped with the preparation, review, and approval of the manuscript for submission.

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